Amendments to the Claims

No claims are being cancelled, amended, or added. The Claim Listing below is being provided for the convenience of the Examiner and reflects the claims after entry of the Claim Listing in the Reply filed August 2, 2004:

Claim Listing

1. (Previously Presented) A system for transferring synchronous optical network/synchronous digital hierarchy (SONET/SDH) frames between a first and second node comprising:

a demultiplexer to map SONET/SDH frames onto a plurality of data channels having an aggregate data rate equivalent to the data rate of the SONET/SDH frames;

an encoder to encode and translate data on each data channel for transmission;

a decoder to decode and translate data on each data channel for reception; and

a multiplexer to map the plurality of data channels onto SONET/SDH frames.

2. (Original) The system of Claim 1 wherein the demultiplexer includes a framer to determine the position of frame markers in the data.

3. (Original) The system of Claim 1 wherein the first and second node communicate over parallel transmission links.

4. (Original) The system of Claim 3 wherein the parallel transmission links comprise a parallel-optics based transmission link.

5. (Original) The system of Claim 3 wherein the parallel transmission link comprises a wavelength division multiplexed (WDM) based transmission link.

6. (Previously Presented) A method of transferring synchronous optical network/synchronous digital hierarchy (SONET/SDH) frames between a first and second node comprising:

mapping the SONET/SDH frames onto a plurality of data channels having an aggregate data rate equivalent to the data rate of the SONET/SDH frames; and

transferring the SONET/SDH frames over a plurality of parallel transmission links.

7. (Original) The method of Claim 6 wherein transferring the SONET/SDH frames over parallel transmission links includes transmitting and receiving the SONET/SDH frames over parallel transmission links.

8. (Original) The method of Claim 7 includes byte stripping bytes of the SONET/SDH frames onto parallel data channels.

9. (Original) The method of Claim 7 further comprising encoding each data channel for data formatting.

10. (Original) The method of Claim 7 further comprising framing each data channel.

11. (Original) The method of Claim 6 wherein the parallel transmission links comprises a parallel-optics based transmission link.

12. (Original) The method of Claim 11 wherein the optical transmission link comprises at least 12 fibers.

13. (Original) The method of Claim 6 wherein the parallel transmission links comprises a wavelength division multiplexed (WDM) based transmission link.

14. (Original) The method of Claim 6 wherein the rate of SONET/SDH frames corresponds to an OC-192/STM-64 line rate.

15. (Original) The methods of Claim 7 wherein receiving SONET/SDH frames further comprises, receiving data from each of the parallel transmission links; decoding each data channel; realigning each data channel to compensate for an inter-channel skew; and recombining the data channels into a SONET/SDH frame.

16. (Previously Presented) A method of transmitting synchronous optical network (SONET)/Synchronous digital hierarchy (SDH) frames over a parallel transmission system comprising:

mapping SONET/SDH frames onto data channels having an aggregate data rate equivalent to the data rate of the SONET/SDH frames; and

transmitting the SONET/SDH frames over parallel transmission links.

17. (Previously Presented) A method of transmitting SONET/SDH frames over a parallel transmission system, the SONET/SDH frames having frame markers, the method comprising:

determining the position of the frame markers;

byte stripping bytes of the SONET/SDH frames onto a plurality of parallel data channels having an aggregate data rate equivalent to the data rate of SONET/SDH frames;

encoding each data channel; and

transmitting the channels over parallel transmission links.

18. (Original) The method of Claim 17 wherein the parallel transmission links comprises a parallel-optics based transmission link.

19. (Original) The method of Claim 18 wherein the optical transmission link uses at least 12 fibers.

20. (Original) The method of Claim 17 wherein the parallel transmission links comprises a wavelength division multiplexed (WDM) based transmission link.

21. (Original) The method of Claim 17 wherein the rate of SONET/SDH frames corresponds to an OC-192/STM-64 line rate.

22. (Original) The method of Claim 17 wherein frame delimiting is performed by overwriting at least a SONET byte on each data channel.

23. (Original) The method of Claim 17 wherein at least a first three SONET framing bytes are overwritten on each data channel.

24. (Original) The method of Claim 17 wherein unique frame delimiters are used on a subset of the data channels.

25. (Previously Presented) The method of Claim 24 wherein a first frame delimiter is used for a first half of the data channels and a second frame delimiter is used for a second half of the data channels.

26. (Original) The method of Claim 17, wherein each channel is encoded using a block-code.

27. (Original) The method of Claim 17 wherein the data channels are logically combined in such a manner to enable recovery of a single data channel and the logically combined channel exists as a separate data channel.

28. (Original) The method of Claim 17 wherein a further data channel carries cyclic redundancy check (CRC) bits for the plurality of data channels.

29. (Previously Presented) A method of receiving SONET/SDH frames over a parallel transmission system comprising:

recovering data from each transmission link transmitted at an aggregate data rate equivalent to a data rate of SONET/SDH frames;

decoding each data channel;

realigning each data channel to compensate for an inter-channel skew; and

recombining the data channels into a SONET/SDH frame.

30. (Original) The method of Claim 29, wherein the parallel transmission system comprises a parallel-optics based transmission link.

31. (Original) The method of Claim 30 wherein the optical transmission link uses at least 12 fibers.

32. (Original) The method of Claim 29 wherein the parallel transmission system comprises a wavelength division multiplexed (WDM) based transmission link.

33. (Original) The method of Claim 29 wherein the rate of SONET/SDH frames corresponds to an OC-192/STM-64 line rate.

34. (Original) The method of Claim 29 wherein the receiver detects a polarity of the transmission links by use of unique frame delimiters on subsets of the data channels.

35. (Original) The method of Claim 30 further comprising a loss of synchronization condition on a channel if a plurality of code word violations occur.

36. (Original) The method of Claim 29 wherein a channel failure is detected using the loss of synchronization condition.

37. (Original) The method of Claim 29 further comprising detecting and correcting errors on the data channels by calculating a cyclic redundancy check (CRC) for a block of data on the data channel; comparing it to a corresponding, separately-transmitted CRC for the block; and recovering the data from a protection channel if the CRC's do not match.

38. (Previously Presented) A transceiver module for transferring SONET/SDH frames between a first and second node, comprising:

a converter circuit to adapt incoming signals for transmission of parallel transmission links having an aggregate data rate equivalent to the data rate of the incoming signals;

a parallel transmit optic module to transmit data channels; and

a parallel receive optic module to receive data channels.

39. (Previously Presented) The transceiver module of Claim 38 wherein a line rate for transferring SONET/SDH frames corresponds to an OC-192/STM-64 line rate.

40. (Original) The transceiver module of Claim 38 wherein the first and second node communicate over parallel transmission links.

41. (Original) The transceiver module of Claim 40 wherein the parallel transmission links comprise a parallel-optics based transmission link.

42. (Original) The transceiver module of Claim 40 wherein the parallel transmission link comprises a wavelength division multiplexed (WDM) based transmission link.

43. (Previously Presented) The transceiver module of Claim 38 wherein the converter circuit interfaces with a framer chip.

44. (Original) The transceiver module of Claim 38 wherein the parallel transmit optic module is integral with the parallel receive optic module.

45. (Previously Presented) The system of Claim 2 wherein the encoder overwrites the frame markers on each channel with unique frame markers used for automatic skew compensation.

46. (Previously Presented) The system of claim 45 wherein the unique frame markers are different for each channel.

47. (Previously Presented) The system of Claim 46 further including a ribbon patchcord with multiple optical fibers on which the data channels are transmitted between the encoder and decoder, and wherein the unique frame markers are used to detect if the optical fibers cause a crossover between or among the channels.

48. (Previously Presented) The system of Claim 47 further including an aligner that re-orders the channels based on the unique frame markers to compensate for a crossover of optical fibers in the ribbon patchcord.

49. (Previously Presented) The system of Claim 47 further including an aligner that re-orders data on the channels as a function of the unique frame markers.

50. (Previously Presented) The system of Claim 2 further including an aligner that deskews individual channels by using frame markers as delimiters to compensate for inter-channel skew that occurs due to propagation delay differences between or among the channels.

51. (Previously Presented) The system of Claim 1 wherein the data channels are logically combined in such a manner to enable recovery of a single data channel and the logically combined channel exists as a separate data channel.

52. (Previously Presented) The system of Claim 1 wherein a further channel carries cyclic redundancy check (CRC) bits for the plurality of data channels.